

**1996 Sandia National Laboratory  
Albuquerque  
Annual Epidemiologic  
Surveillance Report**

## **SANDIA NATIONAL LABORATORY-ALBUQUERQUE 1996 Annual Epidemiologic Surveillance Report**

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**<http://www.eh.doe.gov/epi/surv>**

# **SANDIA NATIONAL LABORATORY - ALBUQUERQUE 1996**

## **At a Glance**

The predominant types of jobs shifted from 1993 to 1996, with an increase in Professional staff and a decrease in Support staff and Clerical workers. The percent of Crafts and Manual Laborers and Security workers remained steady over the four-year period.

About eight percent of the workers reported at least one absence in 1996, unchanged from the 1995 percentage.

An absence rate among women (15 absences per 100 workers) was about twice the rate among men (7 per 100 workers), a gender difference that has been noted every year since the site's first epidemiologic surveillance report in 1993.

For both men and women, the absence rate increased with age, as did the average number of days absent.

The highest rate of five-day absences among women occurred in the Crafts and Manual Labor job category; among men, Clerical workers had the highest absence rate.

We saw no consistent trends in rates for respiratory conditions, circulatory conditions, injuries, or cancer between 1993 and 1996.

Sandia experienced a four percent increase in OSHA-recordable events over the number in 1995. The rate of OSHA events was similar for women and men.

Among women, Security personnel, Crafts and Manual Laborers, and Clerical workers had noticeably higher rates of occupational injuries and illnesses compared with other job categories. Men classified as Crafts and Manual Laborers or Security staff had elevated OSHA-recordable rates compared with other job categories.

Overall, the average number of workdays lost or with restricted activity was low. Women averaged four lost or restricted workdays compared with six among men.

The more common occupational accidents among Sandia workers involved overexertion and strenuous movements, repetitive trauma, and falls.

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## Introduction

The U.S. Department of Energy's (DOE) commitment to assuring the health and safety of its workers includes the conduct of epidemiologic surveillance activities that provide an early warning system for health problems among workers. The Epidemiologic Surveillance

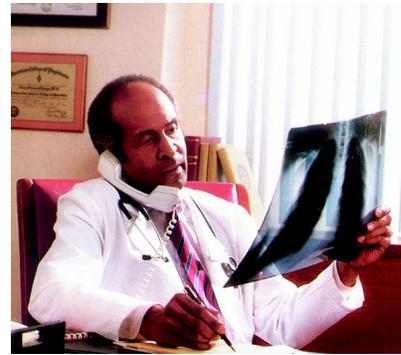


Program monitors illnesses and health conditions that result in an absence of five or more consecutive workdays, occupational injuries and illnesses, and disabilities and deaths among current workers.

Epidemiologic Surveillance has been conducted at Sandia National Laboratory-Albuquerque (SNL-AL) since 1993. This report provides a summary of epidemiologic surveillance data collected from SNL-AL from January 1, 1996 through December 31, 1996. The data were collected by a coordinator at SNL-AL and submitted to the Epidemiologic Surveillance Data Center located at Oak Ridge Institute for Science and Education, where quality control procedures and preliminary data analyses were carried out. The analyses were interpreted and the final report prepared by the Office of Epidemiologic Studies.

The Epidemiologic Surveillance report for SNL-AL has been redesigned for 1996. The information in this report provides highlights of the data analyses conducted. Surveillance reports and

additional supporting tables for the report are posted on the Office of Epidemiologic Studies' Web site



(<http://www.eh.doe.gov/epi/surv>), or are available by request. The main sections of the report include: work force characteristics; absences due to injury or illness lasting five or more consecutive workdays; workplace illnesses, injuries, and deaths that were reportable to the Occupational Safety and Health Administration ("OSHA-recordable" events); and disabilities and deaths among current workers. The report also includes a section on time trends that provides comparative information on the health of the work force from 1993 to 1996.

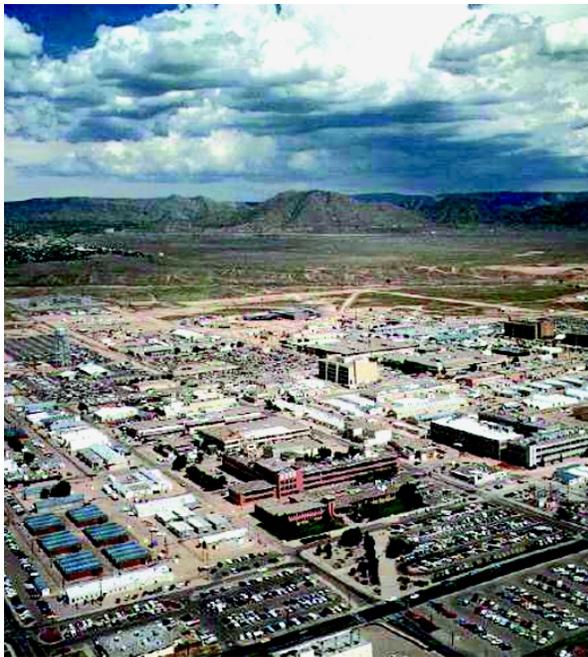
**Note: In the figures and calculations that follow, percentages have been rounded to the nearest whole number.**

DOE sites vary by mission, function, job classification, and worker exposures, so comparisons of SNL with other DOE sites should be made cautiously. The differences between sites and factors at each site that affect the completeness and accuracy of the health information reported can affect the patterns of illness and injury observed.



## Site Overview

Sandia National Laboratory-Albuquerque (SNL-AL) is located at the foot of the Manzano Mountains adjacent to the city of Albuquerque, New Mexico, and is essentially surrounded by Kirtland Air Force Base. For more than 50 years, Sandia has served as one of the major national defense research and development (R&D) laboratories. The facility started in 1945 as Z Division of what is now Los Alamos National Laboratory. As part of the Manhattan Project, the site's mission was ordnance design, testing, and assembly.



The original mission of SNL-AL's R&D nuclear weapons activities expanded to include support of the space program and work on other advanced military technologies, energy programs, arms verification, and control technology and applied research. Sandia's mission continues to evolve, but the site's core mission remains stewardship and development of the nation's nuclear



stockpile. Sandia assumed "cradle to grave" responsibility for nuclear weapons in 1995, which includes partnering with the other national laboratories, the military services, and industry to ensure the reliability of the weapons and to oversee their removal from the nuclear stockpile when they are retired. Sandia also continues to conduct vital programs in environmental testing, radiation research, combustion research, computing, microelectronics research and production, and other related fields. The Sandia Corporation, a Lockheed Martin company, currently manages the site.

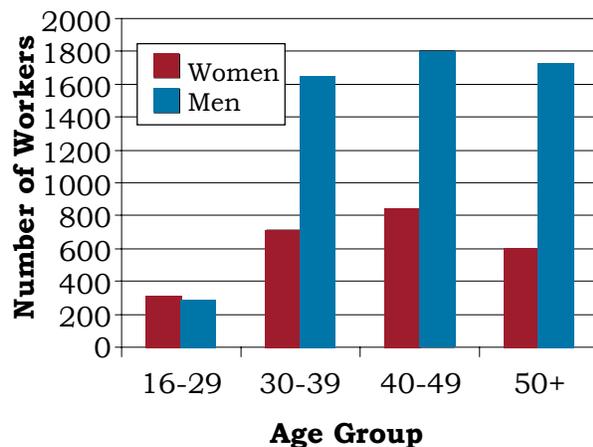
## The Sandia Work Force - 1996

Epidemiologic surveillance included a total of 7,874 SNL-AL employees in 1996, 594 fewer workers than were present in 1995. The gender and age distribution of the 1996 work force is shown in Figure 1.



There were 5,430 men (69 percent) and 2,444 women (31 percent) with an average age of 44 years for male SNL workers and 42 years for females. The gender distribution of the work force has been constant since epidemiologic surveillance was initiated at the site in 1993. The majority of the SNL-AL workers was white (72 percent); Hispanics comprised about 20 percent of the work force, and African Americans, Asians, and Native Americans made up the remaining 8 percent.

**Figure 1. The Work Force by Gender and Age**



Individual job titles were grouped into job categories for this report. The grouping was necessary because there were too few workers or not enough health

events among workers with a particular job title, which limited the types of analyses that could be performed. Men and women were not distributed equally among the various occupational groups, as shown in Figure 2. We noted the largest gender differences in the Professional Staff, Support Staff, and Clerical groups (Figure 2). Forty-two percent of the women were classified as Professional Staff; an additional 26 percent were Support Staff and 19 percent held Clerical positions. By comparison, almost two-thirds of the male workers were classified as Professional Staff and only one percent held Clerical positions. Men were more heavily represented among the Crafts and Manual Laborers. A more detailed distribution of the work force by gender, age, and occupation is available in the supporting tables for this report at <http://www.eh.doe.gov/epi/surv>. The predominant types of jobs shifted from 1993 to 1996, with an increase in Professional Staff and a decrease in Support Staff and Clerical workers. The percent of Crafts and Manual Laborers and Security workers remained steady over the four-year period.

**Figure 2. The Work Force by Job Category and Gender**

| Job Category          | Women         | Men           |
|-----------------------|---------------|---------------|
| Professional Staff    | 1,035<br>42%  | 3,578<br>66%  |
| Support Staff         | 626<br>26%    | 849<br>16%    |
| Clerical              | 455<br>19%    | 69<br>1%      |
| Crafts & Manual Labor | 69<br>3%      | 463<br>9%     |
| Security              | 11<br>< 1%    | 112<br>2%     |
| Non-Regular           | 208<br>8%     | 178<br>3%     |
| Unknown               | 40<br>2%      | 181<br>3%     |
| Total                 | 2,444<br>100% | 5,430<br>100% |

## Number and Length of Absences

Epidemiologic surveillance examines absences of five or more consecutive workdays (also referred to as “5-day absences”). This threshold is based on DOE Order 440.1, which requires contractor management to notify Occupational Medicine when a worker



has been absent for five or more consecutive workdays or 40 consecutive work hours. If an absence overlaps a weekend, the weekend days are counted in the total duration of absence, but do not replace the 5 workday requirement. When an absence overlaps a weekend, the Friday and Monday surrounding that weekend are considered consecutive workdays. All work related illnesses and injuries must be reported regardless of length of absence. Non-occupational illnesses and injuries that involve absences less than five days do not routinely require a medical clearance for return to work and are thus excluded from these analyses.

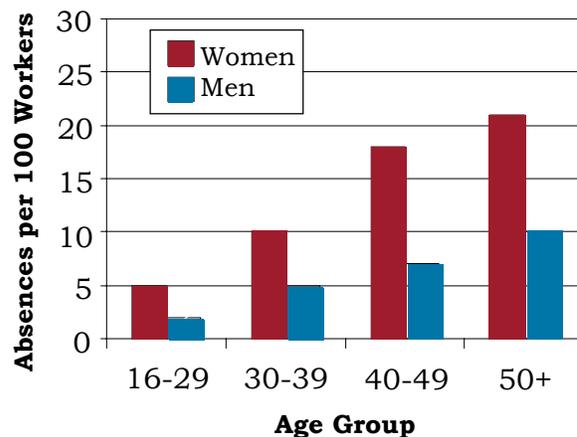
One change from previous reports is the exclusion of certain health events that lasted at least five consecutive workdays but did not result from an illness or injury. These events included 37 women with 40 reported absences for maternity leave and 4 women and 5 men who reported absences for elective

surgical procedures not related to the treatment of an illness or injury.

Throughout this report, the analyses take gender, age, and occupation into account because the risk of illness and injury varies by these factors. This is done either by presenting the analyses in distinct age, gender, or job categories (i.e., stratification) or by statistical methods of adjustment.

About 8 percent of the workers reported at least one absence in 1996, essentially unchanged from the 1995 percentage. The 366 5-day absences among 2,444 women resulted in an absence rate of 15 absences per 100 workers. The rate among men was 7 per 100 workers (403/5,430). This gender difference has been noted every year since the site’s first epidemiologic surveillance report in 1993. For both men and women, the absence rate increased with age (Figure 3). In each age group, the rate remained lower for men than for women. The average duration of absence also increased with age for both men and women, as shown in Figure 4. There was little difference in the average duration of absence between men and women aged 40 and older.

**Figure 3. Absence Rate by Gender and Age**



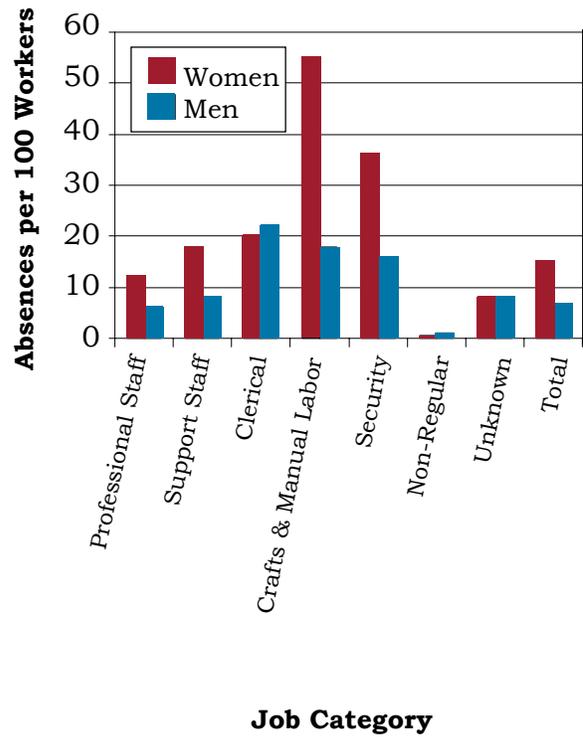
The rate of 5-day absences varied by job category for men and women (Figure 5). The highest rate among women occurred in the Crafts and Manual Labor job category among men, Clerical workers had the highest absence rate. Rates among women were about twice as high as those of men in the Professional Staff, Support Staff, Crafts and Manual Labor, and Security job categories.

**Figure 4. Number of Days Absent by Gender and Age**

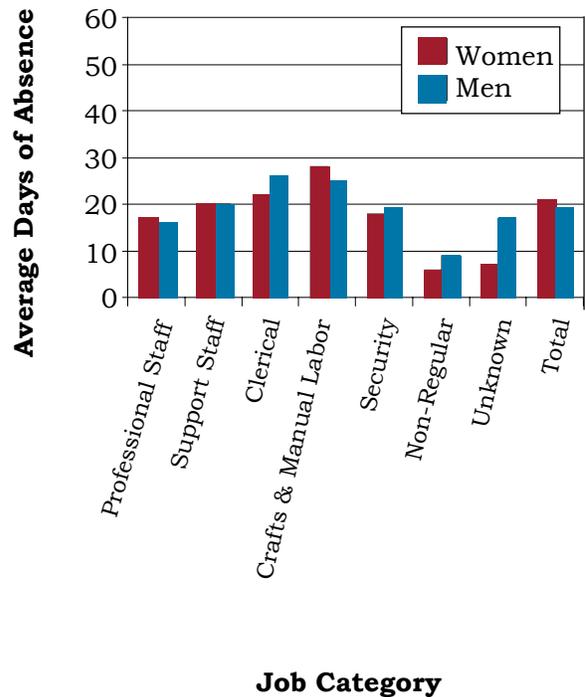
| Gender | Age     | Number of Absences | Number of Days Absent | Average Number of Days Absent |
|--------|---------|--------------------|-----------------------|-------------------------------|
| Women  | 16 - 29 | 15                 | 215                   | 14                            |
|        | 30 - 39 | 74                 | 1,445                 | 20                            |
|        | 40 - 49 | 154                | 3,308                 | 21                            |
|        | 50 +    | 123                | 2,524                 | 21                            |
|        | Total   | 366                | 7,492                 | 20                            |
| Men    | 16 - 29 | 6                  | 43                    | 7                             |
|        | 30 - 39 | 86                 | 1,251                 | 15                            |
|        | 40 - 49 | 135                | 2,430                 | 18                            |
|        | 50 +    | 176                | 3,978                 | 23                            |
|        | Total   | 403                | 7,702                 | 19                            |

As shown in Figure 6, there was no consistent difference in average duration of absence between men and women in various occupations. In general, the average duration of absence varied little between men and women, regardless of occupation. For the work force as a whole, there was little difference in the average duration of absences between men (19 days) and women (20 days). Additional information about the number and length of absences for men and women in different age and occupational groups is presented in the Supporting Tables for this report at <http://www.eh.doe.gov/epi/surv>.

**Figure 5. Absence Rate by Job Category and Gender**



**Figure 6. Average Duration of Absence by Job Category and Gender**



## Diagnostic Categories

Epidemiologic surveillance monitors *all* illnesses and injuries among active workers because it is not always possible to determine which health effects are due to occupational exposures and which ones are due to other causes. Most illness and injury diagnoses are reported to the occupational medicine clinic by workers who require return-to-work clearances. An absence due to illness or injury may involve more than one diagnosis, and epidemiologic surveillance includes all reported diagnoses. In addition, the OSHA 200 Log provides information on occupational injuries and illnesses whether or not they involve absences.

This report organizes illness and injury categories based on a standard reference, the International Classification of Diseases, 9<sup>th</sup> Revision, Clinical Modification (ICD-9-CM). This reference is used to classify absences for statistical purposes. You can find specific diagnoses in the supporting tables (Explanation of Diagnostic Categories).

The number of reported diagnoses categorized according to the ICD-9-CM and the number of lost calendar days are presented in Figure 7. There were 554 diagnoses reported by female workers and 572 diagnoses reported by male Sandia employees in 1996. The most frequently reported diagnoses varied little by gender.



**Figure 7. Number of Diagnoses and Lost Calendar Days by Diagnostic Category (Categorized by ICD-9-CM) and Gender**

| Diagnostic Category      | Women               |                              | Men                 |                              |
|--------------------------|---------------------|------------------------------|---------------------|------------------------------|
|                          | Number of Diagnoses | Number of Lost Calendar Days | Number of Diagnoses | Number of Lost Calendar Days |
| Benign Growths           | 16                  | 452                          | 3                   | 60                           |
| Blood                    | 5                   | 200                          | 1                   | 5                            |
| Cancer                   | 17                  | 407                          | 23                  | 1,274                        |
| Digestive                | 45                  | 723                          | 77                  | 1,372                        |
| Endocrine / Metabolic    | 6                   | 237                          | 8                   | 131                          |
| Existing Birth Condition | 2                   | 53                           | 1                   | 25                           |
| Genitourinary            | 71                  | 2,013                        | 26                  | 425                          |
| Heart / Circulatory      | 17                  | 362                          | 37                  | 969                          |
| Infections / Parasites   | 18                  | 161                          | 15                  | 255                          |
| Injury                   | 52                  | 1,068                        | 87                  | 1,576                        |
| Miscarriage              | 2                   | 14                           | NA                  | NA                           |
| Muscles and Skeleton     | 76                  | 2,506                        | 92                  | 2,397                        |
| Nervous System           | 25                  | 496                          | 34                  | 518                          |
| Psychological            | 46                  | 1,863                        | 16                  | 405                          |
| Respiratory              | 114                 | 1,226                        | 108                 | 1,308                        |
| Skin                     | 7                   | 205                          | 6                   | 75                           |
| Unspecified Symptoms     | 35                  | 891                          | 38                  | 490                          |

Note: Lost calendar days for each absence are counted more than once if there are multiple diagnoses per absence.

Female employees accrued 7,492 lost calendar days due to injury and illness. Among women, respiratory conditions (21 percent), muscular and skeletal conditions (14 percent), and genitourinary conditions (13 percent) accounted for almost half of all reported diagnoses. The majority (61 percent) of the respiratory conditions involved acute infections of the upper respiratory tract (31 percent, primarily sinusitis) and chronic obstructive pulmonary disease (30 percent, mostly bronchitis and asthma). Arthritis made up 33 percent of the muscular and skeletal conditions, followed by rheumatism (28 percent), acquired deformities (21 percent, primarily affecting the toes), and back

pain and disc injuries (18percent). Disorders associated with menses or ovulation comprised 76 percent of the genitourinary diagnoses; an additional 15 percent involved urinary obstruction or urinary tract infections.

Among women, the most frequently reported diagnoses were not consistent among the various age groups. For those 30-49 years old, frequently reported diagnoses included the genitourinary system; all but 7 of the 57 diagnoses related to disorders of the reproductive organs. Digestive diseases were the third most frequently reported diagnoses among women 30-39 years old. Eight women reported 11 diagnoses, four of which were for tooth and gum conditions and four for gallbladder disease.

Men accrued 7,702 lost calendar days due to injury and illness. Fifty percent of all reported diagnoses among men were due to respiratory problems (19 percent), muscular and skeletal (16



percent), and injuries (15 percent). As with women, the majority (65 percent) of the respiratory diagnoses involved infections (colds, sinusitis, etc.), 19 percent were chronic obstructive

pulmonary disease, and pneumonia and flu comprised 13 percent. Arthritis accounted for a third of the diagnoses involving muscular and skeletal conditions, 32 percent were due to back problems, and 28 percent were

attributed to rheumatism. Frequently reported injuries were sprains and strains (37 percent), fractures (25 percent), and dislocations (21 percent). Men also reported 77 diagnoses related to the digestive system. The majority of these diagnoses included hernias (42 percent) and gallbladder disease (9 percent).

Among men, these diagnoses varied little with age. Injuries, conditions affecting the respiratory system, and diagnoses related to the muscles and skeleton were among the top three conditions for men of all ages except those 50 or older. Among these older workers, digestive conditions were more common than injuries.

Figure 8 shows the frequency of reported diagnoses by job category for men and women. The types of diagnoses did not vary significantly by job category. Among men, muscular and skeletal conditions, injuries, and respiratory conditions appeared most often in nearly all job categories. Among male Professional Staff and Support Staff, digestive conditions were common. Twenty-six of the 58 digestive diagnoses reported by these two groups were for hernias.

Among women, respiratory conditions appeared in all occupational groups, and muscular and skeletal conditions appeared frequently. Women in the Professional Staff, Security, and Support Staff categories frequently reported genitourinary conditions. Psychological conditions (anxiety, stress, and depression) were frequently reported among women in the Clerical category. Among the Crafts and Manual Labor group, all seven cancer diagnoses were reported by one woman.

**Figure 8. Most Frequently Reported Diagnoses by Job Category and Gender**

| Job Category          | Men   | Women  |
|-----------------------|---|--|
| Professional Staff    | Respiratory (59)<br>Muscles and Skeleton (49)<br>Digestive (44)   | Respiratory (39)<br>Genitourinary (31)<br>Muscles and Skeleton (19)                        |
| Support Staff         | Injury (19)<br>Respiratory (19)<br>Muscles and Skeleton (15)<br>Digestive (14)                              | Respiratory (27)<br>Muscles and Skeleton (27)<br>Genitourinary (23)                        |
| Clerical              | Respiratory (5)<br>Genitourinary (4)<br>Psychological (4)<br>Muscles and Skeleton (4)                       | Respiratory (36)<br>Muscles and Skeleton (20)<br>Psychological (17)                        |
| Crafts & Manual Labor | Injury (22)<br>Respiratory (19)<br>Muscles and Skeleton (16)  | Muscles and Skeleton (10)<br>Cancer (7)<br>Respiratory (7)<br>Injury (6)                   |
| Security              | Injury (6)<br>Respiratory (4)<br>Muscles and Skeleton (4)<br>Unspecified Symptoms (3)                       | Genitourinary (4)<br>Respiratory (2)<br>Benign Growths (1)<br>Existing Birth Condition (1) |
| Non-Regular           | Heart/Circulatory (1)<br>Muscles and Skeleton (1)   | Respiratory (1)  |
| Unknown               | Nervous System (4)<br>Unspecified Symptoms (4)<br>Injury (3)<br>Muscles and Skeleton (3)<br>Respiratory (2) | Respiratory (2)<br>Infections/Parasites (1)  |

Note: Numbers in parentheses are number of diagnoses reported.

## Rates of Disease Occurrence

**A Word about Rates:** The previous section considered the **number** of absences and diagnoses among various worker groups. For example, Figure 7 shows that men reported 87 and women reported 52 diagnoses involving injuries during 1996. Men, therefore, reported more injuries than women. As there are more than twice as many men than women at Sandia, it seems reasonable to expect more injuries among men than women. Does this mean that men were at greater risk of injuries compared with women in 1996? To correctly answer the question, the total number of men and women in the work force must be considered. A more accurate way to compare risk among men and women is to calculate the injury rate for each gender. Rates are calculated by dividing the number of injury diagnoses in a given gender by the total number of employees of that gender. Multiply this number by 1,000 to get the diagnosis rate per 1,000 workers.

For example:

$$\begin{aligned} 87 \text{ injury diagnoses} \div 5,430 \text{ men} &= \\ .016 \times 1,000 &= \\ 16 \text{ injury diagnoses per } 1,000 \text{ men} \end{aligned}$$

$$\begin{aligned} 52 \text{ injury diagnoses} \div 2,444 \text{ women} &= \\ .021 \times 1,000 &= \\ 21 \text{ injury diagnoses per } 1,000 \text{ women} \end{aligned}$$

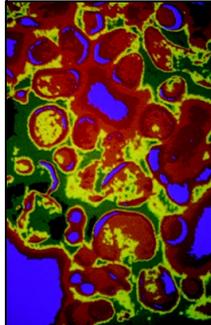
Comparing these rates now correctly suggests that reported absences due to injuries among women are somewhat higher than the rates for men. They are called **crude rates** because they do not account for possible differences between men and women such as age and other factors that might affect the individual's risk of having an injury. Because age is so strongly related to the risk of disease and injury, epidemiologists almost always take age into account when comparing groups. This is done by using age-specific categories, or by statistical methods of adjustment.

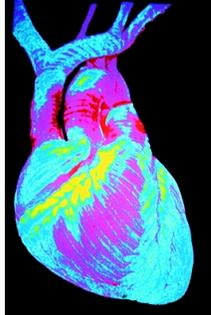
The diagnosis rate, also called the illness and injury rate, is the number of diagnoses of a given disease or injury reported over the course of a year per 1,000 workers at risk of getting that condition. (See shaded box). One diagnosis, arthritis for example, may result in several 5-day absences over a year. Conversely, one 5-day absence may be associated with multiple diagnoses (e.g., the flu *and* a sprained wrist) recorded on the return-to-work form.

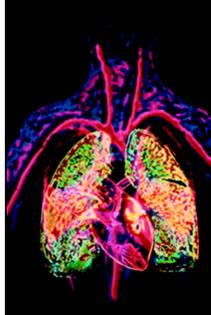
In the following set of analyses, the four age groups used previously were collapsed into two: workers less than 50 years of age and those 50 or older (Figure 9). These groups were collapsed to insure that the number of diagnoses in each group was large enough to analyze. Five groups of diagnoses of particular interest to workers are presented: all illnesses and injuries combined, cancer, heart/circulatory system, respiratory system, and injury. Additional information about 15 other disease groups can be found in the supporting tables.

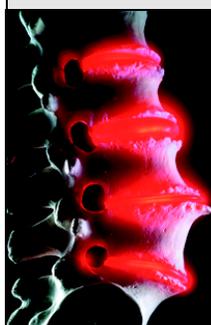
**Figure 9. Illness and Injury Rates by Job Category, Gender, and Age**

| Diagnostic Category   | Rate per 1,000        |     |     |       |
|---|-----------------------|-----|-----|-------|
|   | Job Category          | Age | Men | Women |
|  | Professional Staff    | <50 | 71  | 160   |
|   |                       | 50+ | 102 | 240   |
|   | Support Staff         | <50 | 86  | 242   |
|   |                       | 50+ | 198 | 302   |
|   | Clerical              | <50 | 379 | 310   |
|   |                       | 50+ | 300 | 348   |
|   | Crafts & Manual Labor | <50 | 199 | 750   |
|   |                       | 50+ | 338 | 690   |
|   | Security              | <50 | 196 | 727   |
|   |                       | 50+ | 350 | 0     |
|   | Non-Regular           | <50 | 12  | 5     |
|   |                       | 50+ | 0   | 0     |
|   | Unknown               | <50 | 26  | 27    |
|   |                       | 50+ | 133 | 667   |

| Diagnostic Category  | Rate per 1,000        |     |     |       |
|--|-----------------------|-----|-----|-------|
|  | Job Category          | Age | Men | Women |
|  | Professional Staff    | <50 | 1   | 1     |
|  |                       | 50+ | 8   | 11    |
|  | Support Staff         | <50 | 0   | 5     |
|  |                       | 50+ | 25  | 5     |
|  | Clerical              | <50 | 0   | 7     |
|  |                       | 50+ | 0   | 11    |
|  | Crafts & Manual Labor | <50 | 0   | 175   |
|  |                       | 50+ | 25  | 0     |
|  | Security              | <50 | 0   | 0     |
|  |                       | 50+ | 0   | 0     |
|  | Non-Regular           | <50 | 0   | 0     |
|  |                       | 50+ | 0   | 0     |
| Unknown  | <50                   | 26  | 0   |       |
|  | 50+                   | 0   | 0   |       |

| Diagnostic Category   | Rate per 1,000        |     |     |       |
|---|-----------------------|-----|-----|-------|
|   | Job Category          | Age | Men | Women |
|  | Professional Staff    | <50 | 4   | 5     |
|   |                       | 50+ | 11  | 11    |
|   | Support Staff         | <50 | 2   | 2     |
|   |                       | 50+ | 12  | 24    |
|   | Clerical              | <50 | 0   | 0     |
|   |                       | 50+ | 25  | 11    |
|   | Crafts & Manual Labor | <50 | 13  | 75    |
|   |                       | 50+ | 32  | 0     |
|   | Security              | <50 | 11  | 0     |
|   |                       | 50+ | 0   | 0     |
|   | Non-Regular           | <50 | 6   | 0     |
|   |                       | 50+ | 0   | 0     |
| Unknown   | <50                   | 0   | 0   |       |
|   | 50+                   | 0   | 0   |       |

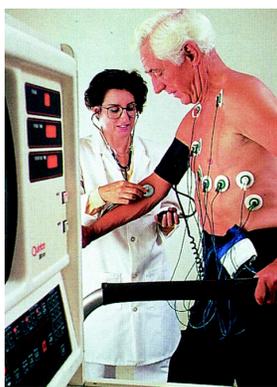
| Diagnostic Category  | Rate per 1,000        |     |     |       |
|--|-----------------------|-----|-----|-------|
|  | Job Category          | Age | Men | Women |
|  | Professional Staff    | <50 | 19  | 33    |
|  |                       | 50+ | 10  | 63    |
|  | Support Staff         | <50 | 16  | 43    |
|  |                       | 50+ | 37  | 44    |
|  | Clerical              | <50 | 138 | 61    |
|  |                       | 50+ | 25  | 107   |
|  | Crafts & Manual Labor | <50 | 46  | 75    |
|  |                       | 50+ | 32  | 138   |
|  | Security              | <50 | 33  | 182   |
|  |                       | 50+ | 50  | 0     |
|  | Non-Regular           | <50 | 0   | 5     |
|  |                       | 50+ | 0   | 0     |
| Unknown  | <50                   | 0   | 27  |       |
|  | 50+                   | 14  | 333 |       |

| Diagnostic Category  | Rate per 1,000        |     |     |       |
|--|-----------------------|-----|-----|-------|
|  | Job Category          | Age | Men | Women |
|  | Professional Staff    | <50 | 11  | 15    |
|  |                       | 50+ | 7   | 17    |
|  | Support Staff         | <50 | 23  | 17    |
|  |                       | 50+ | 21  | 34    |
|  | Clerical              | <50 | 34  | 25    |
|  |                       | 50+ | 0   | 51    |
|  | Crafts & Manual Labor | <50 | 46  | 50    |
|  |                       | 50+ | 51  | 138   |
|  | Security              | <50 | 65  | 0     |
|  |                       | 50+ | 0   | 0     |
|  | Non-Regular           | <50 | 0   | 0     |
|  |                       | 50+ | 0   | 0     |
| Unknown  | <50                   | 0   | 0   |       |
|  | 50+                   | 21  | 0   |       |

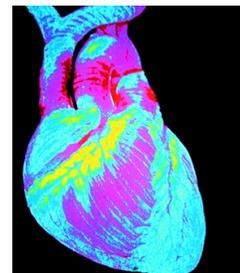
In general, the rates for all illnesses and injuries combined were greater for male and female Sandia workers ages 50 and older. There were three exceptions among women and two among men. Among women, younger workers in Crafts and Manual Labor, Security, and Non-Regular groups had higher rates than did older women. Male Clerical and Non-Regular workers less than 50 years of age had higher rates than older men classified in these job categories. With three exceptions, rates for female employees were higher than for men in the same job category, regardless of age. The exceptions were Security workers age 50 or older and Clerical and Non-Regular workers under 50 years old.

Cancer rates presented in this report are based on reported 5-day absences during the year. A worker may experience several periods of absence from one cancer diagnosis due to medical complications or recurrent treatment. Each reported absence results in a report of a cancer diagnosis. However, it does not imply that this is a new cancer. The cancer rates in this report are **not** comparable to the incidence rates frequently published in many articles on cancer with which you may be familiar. Incident cancer rates are based on the number of new cancer cases diagnosed within a given time, usually a year.

The likelihood that an individual in the U.S. will develop cancer increases with age. Cancer rates at SNL-AL generally reflect this observation. In most job categories the rates were higher among older workers. Forty 5-day



absences related to cancer were reported, 23 diagnoses among 20 men and 17 diagnoses among 10 women. Four of the workers reporting cancer in 1996, reported the same cancer previously, three in 1995 and one in 1994. Five (17percent) of the 30 workers reporting cancer were Crafts and Manual Labor workers, who made up 7 percent of the work force. A rate of 175 per 1,000 workers aged less than 50 was noted among women Crafts and Manual Labor workers. This rate reflected seven diagnoses reported by one woman. Seven of the 10 women reporting cancer diagnoses reported breast cancer, and 11 of the 20 men reported prostate cancer. We saw no apparent pattern involving a particular occupational group. Nine of the 11 men reporting a diagnosis of prostate cancer were in the 50-59 age range and one was in the 40-49 age group, relatively young compared with the age distribution of men with prostate cancer reported in both national and New Mexico Tumor Registry's statistics. The same age distribution was observed in the 1995 Sandia cancer data, which contained prostate cancer diagnoses reported by six men, five of whom were under the age of 60. This observation is worthy of additional followup and will continue to be monitored.



Men and women aged 50 or older generally had higher rates of heart and circulatory problems than did younger workers, with the exception of men categorized as security (one absence) and non-regular (one absence), and women categorized as Crafts and Manual Labor (three absences). Among both

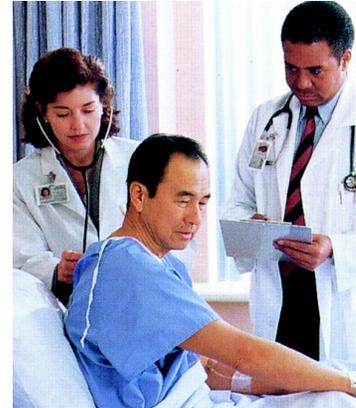
men and women, Crafts and Manual Labor workers had the highest rates. The risk of circulatory disease in the crafts and manual labor group was almost four times greater than that of other job categories. Seventeen of the 28 absences among men occurred in workers aged 50 and older, and 12 of the 21 diagnoses involved ischemic heart disease (restricted blood flow through an artery). Women reported 17 heart/circulatory diagnoses, 9 of which were among workers aged 50 or older. No particular diagnosis was prominent. The rate of 75 diagnoses per 1,000 workers among female Crafts and Manual Labor workers aged less than 50 reflected three diagnoses, two involving diseases of the arteries and one diagnosis of low blood pressure.

In general, women had higher rates of respiratory disease than men. Among men, there was no consistent pattern with age. Older women tended to have higher rates of respiratory diagnoses than did women less than 50 years old. Crafts and Manual Labor workers were almost 3 times more likely to report a respiratory diagnosis than were other occupational groups.

We found no consistent pattern of injury diagnoses with age among men. Regardless of age, Crafts and Manual Labor workers had the highest injury rate among men. Among women under age 50, those in the Crafts and Manual Labor category had the highest injury rate. Crafts and Manual laborers had the highest rate among women aged 50 and older. In general, women aged 50 and older had higher injury rates than those of younger women.



Overall, Crafts and Manual Laborers were over three times more likely to report an injury than workers in other occupational groups. They were also almost five times more likely to report a back sprain or strain and three times more likely to report other sprains or strains. Security workers were over six times more likely to report a sprain or strain other than to the back. Clerical workers were over four times more likely to report a lower limb fracture. (Detailed tables of these analyses are available in the supporting tables for this report.)



In other analyses, the risk of illness and injury among workers classified in one job category was compared with the risk for workers in the remaining six job categories. Crafts and Manual Labor and Security workers were at more than two times the risk of illness and injury when compared with all other groups. Workers in these two groups also had over 5 times greater risk of benign tumors (3 and 1 worker, respectively) compared with others. Crafts and Manual Labor workers had over two times the risk of other workers for nervous system conditions, digestive diseases, and muscular and skeletal conditions. We also noted an increased risk of various skin conditions, genitourinary diseases, and symptoms and ill-defined conditions among security workers compared with other job categories. Additional information about the number of diagnoses, absences and relative risk can be found in the Supporting Tables.

## Time Trends

### Why Are Rates Age-Adjusted?

The injury and illness rates in this section of the report are **age-adjusted**. Differences in the age composition among groups of workers are taken into consideration in the analyses and one rate is calculated for an entire group. This allows us to make comparisons between groups with different age distributions. Age-adjusted rates are calculated using the age distribution of the 1970 U.S. population as a reference.

The four years of epidemiologic surveillance data available for Sandia workers make it feasible to analyze illness and injury trends over time in the work force. Age-adjusted rates for selected illness and injury categories are presented in Figure 10. It is important to note that the age-adjusted rates for 1993-1995 presented in this report differ from the age-adjusted rates presented in *Annual Epidemiologic Surveillance Reports* for 1993-1995 due to the elimination of diagnoses resulting from maternity leave.

Among men, the age adjusted rates for all illness and injury categories combined decreased from 1993 to 1994 and remained stable thereafter. A slight downward trend was noted for respiratory disease and injury rates. We noted a similar decrease in the age adjusted rate for all diagnoses combined among women from 1993 to 1994, but among women the rate increased again after 1994. There was little indication of a consistent trend in rates for respiratory conditions, circulatory conditions, injuries, or cancer. Usually five years of data are needed to determine the direction of a trend. We will continue to examine these data annually to assess

the evidence for trends in injury and illness among Sandia workers.

The rates for all illnesses and injuries combined decreased among men in support occupations (Figure 11). Following an increase from 1993 to 1994, the rate also decreased among men in Crafts and Manual Labor. Men in both Clerical and Security occupations showed a marked decrease between 1993 and 1994, but their rates rebounded substantially by 1995. The diagnosis rate among Professional Staff remained stable over the four year period. Women in the Crafts and Manual Labor group showed a decrease in the age-adjusted rate over time. The rates for women in other job categories did not indicate a consistent change over time over the four years. Both men and women in Security occupations showed the greatest variation in the overall diagnosis rate during the period.

**Figure 10. Age-Adjusted Rates for Selected Diagnostic Categories for Men and Women from 1993 to 1996**

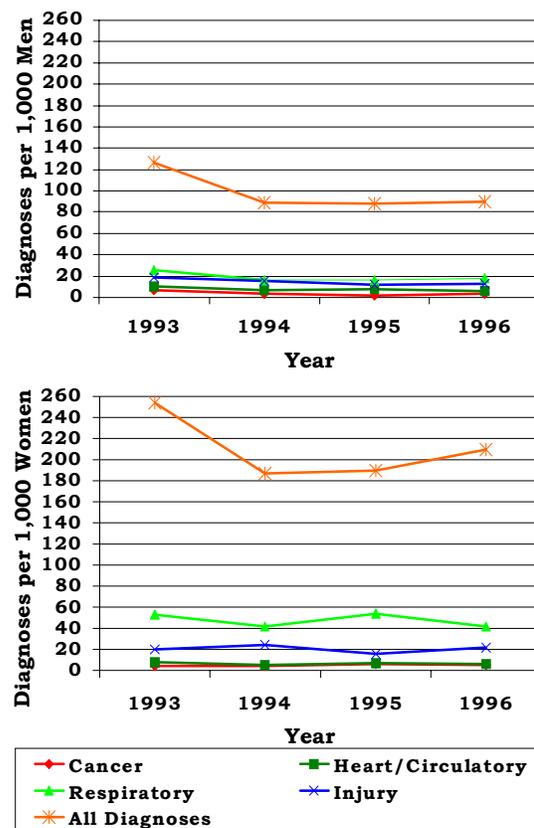
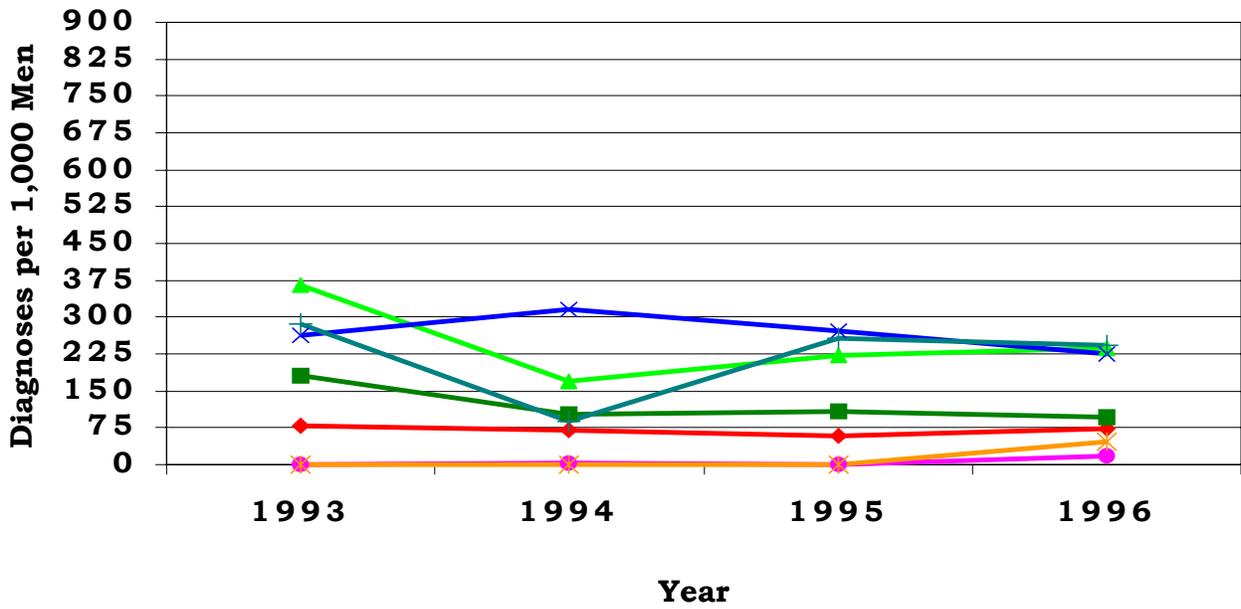
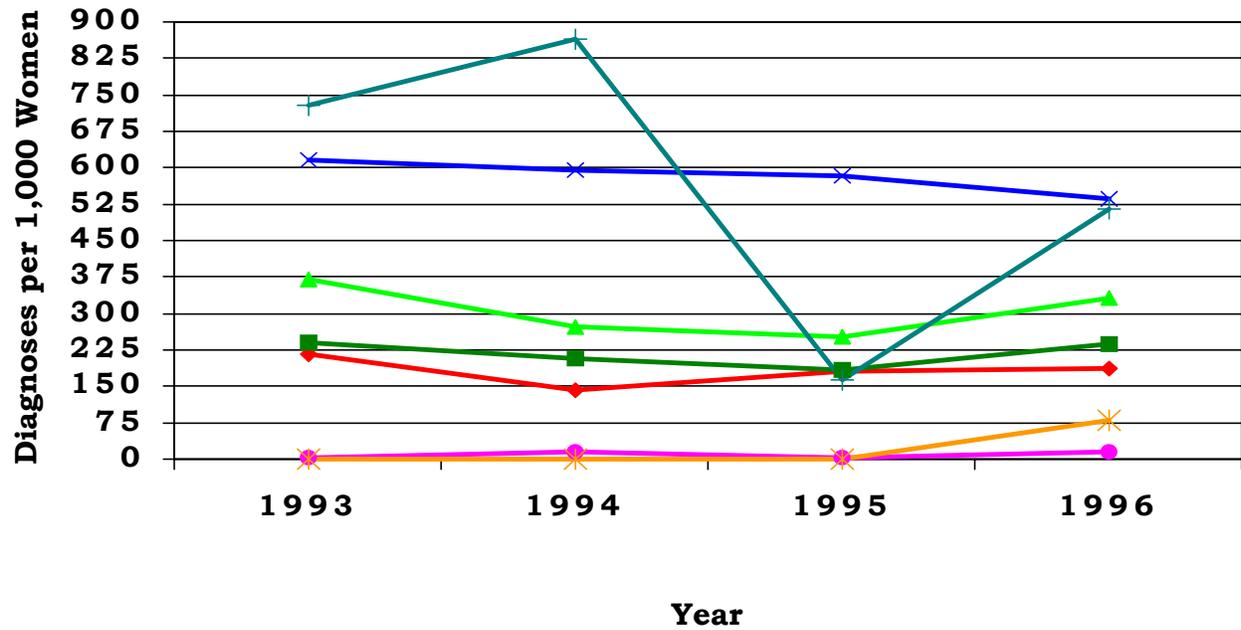


Figure 11. Age-Adjusted Rates for All Diagnoses Combined Among Women and Men by Job Category from 1993 to 1996



- ◆ Professional Staff
- Support Staff
- ▲ Clerical
- Non-Regular
- + Security
- × Crafts & Manual Labor
- ✱ Unknown

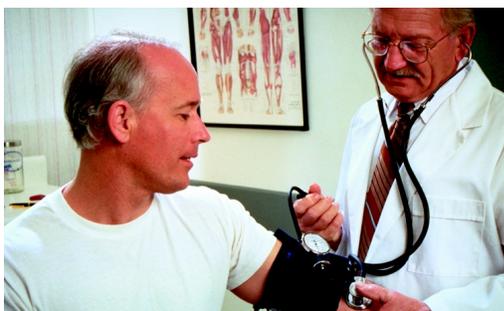
## Sentinel Health Events for Occupations

A sentinel health event for occupation (SHEO) is a disease, disability, or death which is likely to be occupationally related. Its occurrence may serve as a warning signal that materials substitution, engineering control, personal protection, or medical care may be required to reduce the risk of injury or illness in the work force. Sixty-four medical conditions associated with workplace exposures from studies of many different industries have been identified as sentinel health events. (See the supporting tables.)

Although sentinel health events may indicate an occupational exposure, many may result from non-occupational exposures. Due to this uncertainty, sentinel health events are assessed in two categories:

*Definite Sentinel Health Events:* Diseases that are unlikely to occur in the absence of an occupational exposure. Asbestosis, a lung disease resulting from exposure to asbestos, is an example.

*Possible Sentinel Health Events:* Conditions such as lung cancer or carpal tunnel syndrome may or may not be related to occupation. Detailed occupational and non-occupational information is required to determine the work-relatedness of the illness.



No *definite* sentinel health events were identified in 1996. Nine of 1,126 (1 percent) diagnoses were identified as *possible* sentinel health events (Figure 12). Two of nine sentinel health events were identified as carpal tunnel syndrome reported by two workers and resulted in a total of 49 lost calendar days. Both of these workers were in the Professional Staff group and aged 30-49. Forty-nine percent of the total lost calendar days (296) due to sentinel health events resulted from one worker's absence of 146 days for a renal disorder.

**Figure 12. Characteristics of SHEOs by Gender**

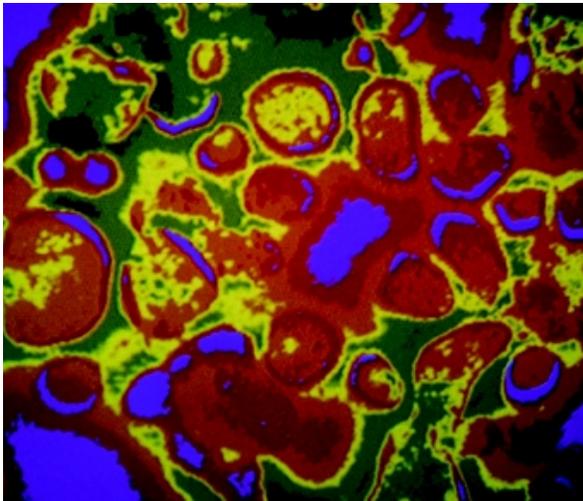
|          | Total Number of SHEOs |       | Total Number of Days Absent |       |
|----------|-----------------------|-------|-----------------------------|-------|
|          | Men                   | Women | Men                         | Women |
| Definite | 0                     | 0     | 0                           | 0     |
| Possible | 6                     | 3     | 269                         | 27    |
| Total    | 6                     | 3     | 269                         | 27    |

## Disabilities Among Active Workers

At Sandia, a worker is placed on long-term disability when absent 30 days or longer. Six workers were placed on long-term disability in 1996, five men and one woman. Five of the disabled workers were 50 years or older. The medical reasons for the disabilities included one each for metabolic disorder, depressive disorder, liver dysfunction, infection, heart disease, and a spinal cord injury. Three of the disabilities occurred among Crafts and Manual Laborers, who made up seven percent (532/7,874) of the work force. The workers on long-term disability were excluded from other analyses in this report because they were not actively working.

## Deaths Among Active Workers

During 1996, six deaths occurred among active workers: five men and one woman. Four of the deaths occurred among the support staff and two among the Crafts and Manual Laborers. The same number of deaths occurred at SNL-AL in 1995, with five among professional staff. The causes of death were cancer (four), heart disease (one), and diabetes (one). The cancer sites included pancreas, stomach, kidney, and ovary.



## OSHA-Recordable Events

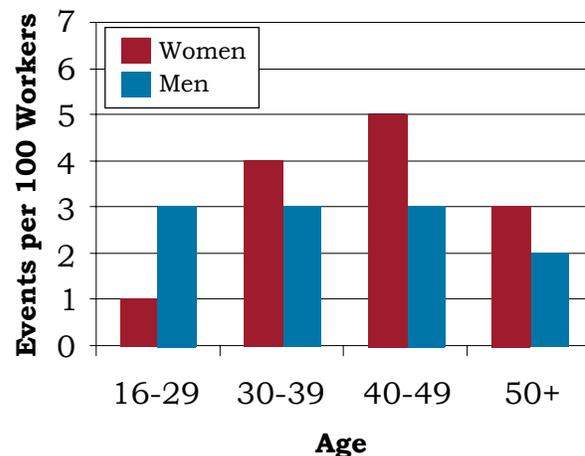
The Occupational Safety and Health Administration (OSHA) requires employers to maintain a record of occupational injuries and illnesses that have occurred among employees and to make that information available to OSHA on request. Employers maintain the information from these OSHA-recordable events in the OSHA 200 Log. OSHA-recordable events differ from absences captured through return-to-work clearances in at least two important respects: (1) they do not necessarily result in days lost from work, and (2) they are usually



accompanied by a specific determination that they are work-related.

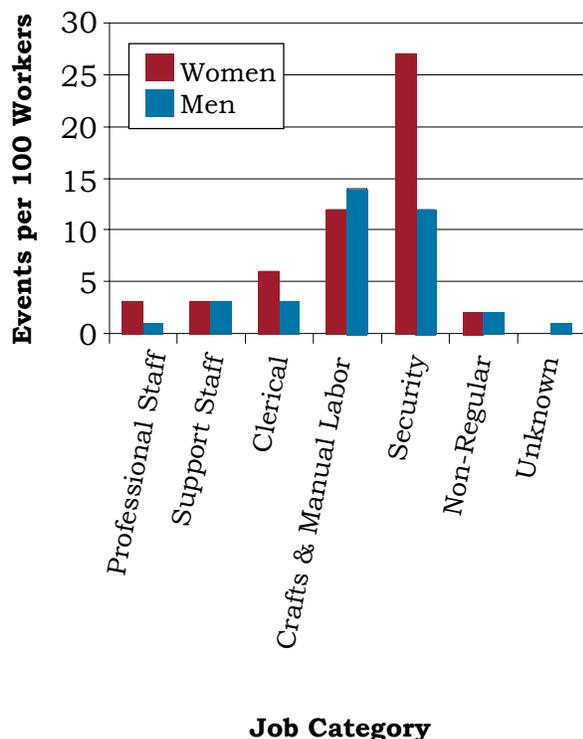
The distribution of OSHA events by age and gender is shown in Figure 13. The 242 OSHA events in 1996 represented a 4 percent increase over the number in 1995. The rate of OSHA events was somewhat higher among women than among men in all age groups except workers 16-29 years of age. The rate of OSHA-recordable injuries did not appear related to age among men, but among women it increased steadily with age to a peak of 5 per 100 women ages 40-49, then declined among women ages 50 and older (Figure 13).

**Figure 13. OSHA-Recordable Events by Gender and Age**



The rates of OSHA recordable events by job category and gender are shown in Figure 14. Among women, Security personnel, Crafts and Manual Laborers, and Clerical workers had noticeably higher rates of occupational injuries and illnesses compared with other job categories. Men classified as Crafts and Manual Laborers or Security staff had elevated OSHA-recordable rates compared with other job categories.

**Figure 14. OSHA-Recordable Events by Job Category and Gender**



Overall, the average number of work-days lost or with restricted activity was low. There were 355 lost or restricted workdays among women, 863 among men. Women averaged four lost or



restricted workdays compared with six among men. There was no apparent relationship between age and average number of lost or restricted workdays among women, but the average number increased with age among men. The highest average number of lost or restricted days was noted among women in Security (13 days) and men in Clerical jobs (13 days) and Crafts and Manual Labor (11 days). The supporting tables for this report contain additional data about OSHA events.



## Diagnostic and Accident Categories for OSHA-Recordable Events

There were 242 OSHA events recorded in 1996. These events included 108 diagnoses among women and 166 diagnoses among men (Figure 15).

**Figure 15. OSHA-Recordable Diagnoses by Diagnostic Category and Gender**

| Diagnostic Category                        | Gender |     |
|--|--------|-----|
|  | Women  | Men |
| Digestive                                  | 0      | 1   |
| Endocrine/Metabolic                        | 0      | 1   |
| Infections/Parasites                       | 0      | 1   |
| Muscles and Skeleton                       | 31     | 26  |
| Nervous System                             | 1      | 5   |
| Respiratory                                | 2      | 5   |
| Skin                                       | 0      | 4   |
| Unspecified Symptoms                       | 8      | 1   |
| Injury                                     | 66     | 122 |
| Fractures-Neck, Trunk                      | 2      | 0   |
| Fractures-Upper Limb                       | 2      | 2   |
| Fractures-Lower Limb                       | 1      | 1   |
| Dislocations                               | 1      | 0   |
| Back Sprains and Strains                   | 15     | 26  |
| Other Sprains and Strains                  | 16     | 30  |
| Open Wounds-Head, Neck, Trunk              | 2      | 3   |
| Open Wounds-Upper Limb                     | 1      | 22  |
| Open Wounds-Lower Limb                     | 0      | 3   |
| Superficial Injuries                       | 5      | 4   |
| Bruises                                    | 11     | 9   |
| Foreign Bodies Entering Orifice            | 1      | 8   |
| Burns                                      | 1      | 4   |
| Injuries to Nerves and Spinal Cord         | 0      | 1   |
| Unspecified Injuries                       | 4      | 2   |
| Adverse reactions to Nonmedical Substances | 4      | 7   |

Among women, injuries accounted for 61 percent of the diagnoses reported; the most common type of OSHA-recordable injury was sprains and strains (47 percent). Seventeen percent of the reported injuries among women were bruises. Among men, injuries accounted



for 73 percent of the diagnoses reported, again primarily due to sprains and strains (46 percent). Open wounds (23 percent) and bruises (7 percent) were also frequently reported diagnoses from injuries among men. Conditions affecting the muscles and skeleton comprised 29 percent of the OSHA recordable diagnoses reported among women; 16 percent among men. Inflammation of the membranes surrounding tendons comprised about 65 percent of these conditions among men and women. Age and occupation did not appear related to the type of injury sustained.

Ninety-eight percent (238) of the 242 OSHA-recordable events were described as an accident in the OSHA logs. This distribution is shown in Figure 16. The majority of the events were described as "other accidents," 60/90 (67 percent) among women and 121/148 (82 percent) among men. Overexertion or strenuous movements accounted for 35 percent and repetitive trauma accounted for 31 percent of these accidents. Among the 238 OSHA-recordable events that included a description of the accident, the types of accidents reported most often were "other accidents," a broad category that includes being struck by an object, injuries from cutting or piercing objects, overexertion, and contact with hot or corrosive material (Figure 16). Falls made up the second most common accident type.

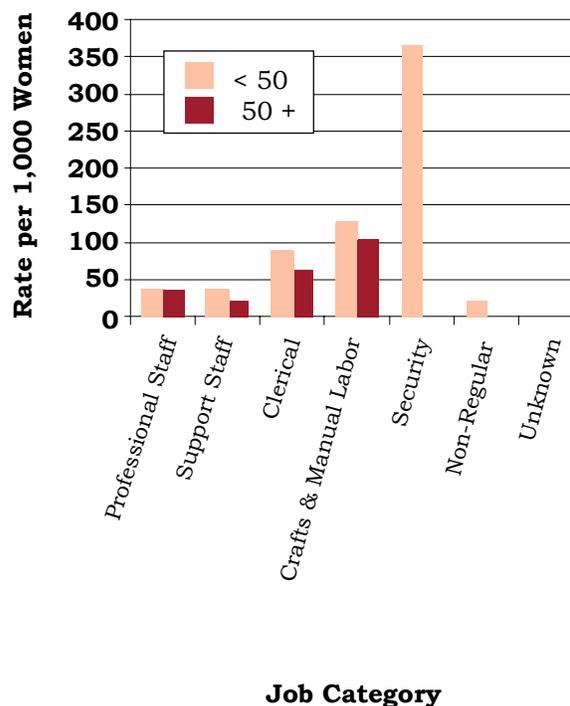
**Figure 16. OSHA-Recordable Accidents by Type and Gender**

| Accident Category                         | Gender                          |                               |
|---|---------------------------------|-------------------------------|
|   | Women<br>Number of<br>Accidents | Men<br>Number of<br>Accidents |
| Motor Vehicle Traffic                     | 3                               | 4                             |
| Poisoning/Non-medicinal                   | 4                               | 6                             |
| Falls                                     | 22                              | 8                             |
| Natural/Environmental Factors             | 0                               | 1                             |
| Submersion/Suffocation/Foreign Bodies     | 1                               | 8                             |
| Other Accidents                           | 60                              | 121                           |
| Caught Between Objects                    | 1                               | 5                             |
| Cutting/Piercing Instrument/Object        | 3                               | 25                            |
| Hot, Corrosive, or Caustic Material/Steam | 1                               | 4                             |
| Overexertion and Strenuous Movements      | 23                              | 41                            |
| Repetitive Trauma                         | 29                              | 28                            |
| Struck by an Object                       | 2                               | 17                            |
| Unspecified                               | 1                               | 1                             |
| Total                                     | 90                              | 148                           |

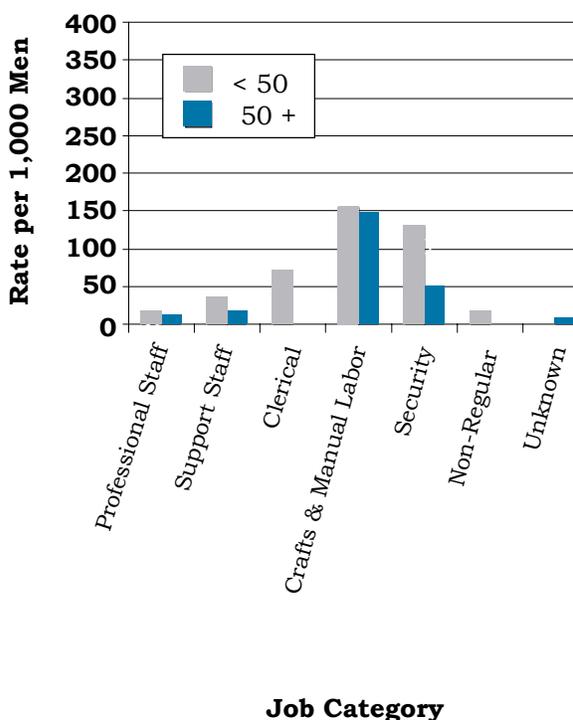
### Rates of OSHA-Recordable Events

The rates of all diagnoses combined, for OSHA-recordable events, by age category, gender, and occupational group are shown in Figures 17 and 18. Rates of OSHA-recordable diagnoses were slightly lower among older workers compared with younger workers. Among both men and women, the rate was over twice as high for Security personnel under age 50 than for older security personnel. Higher rates were also noted among professionals and support staff under 50 years old than among older workers, but the rates among men in these job categories were low, regardless of age. Crafts and Manual Laborers, who comprise about 7 percent of the work force, reported 29 percent of the OSHA events, and Security personnel, somewhat less than two percent of the Sandia work force, reported 7 percent of the OSHA events.

**Figure 17. OSHA-Recordable Rates by Age and Job Category Among Women, All Diagnoses Combined**



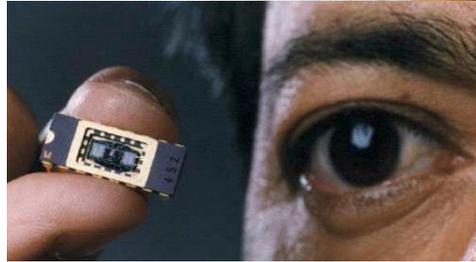
**Figure 18. OSHA-Recordable Rates by Age and Job Category Among Men, All Diagnoses Combined**



Occupational injuries were responsible for substantial numbers of restricted and lost workdays. Workers in the Security and Crafts and Manual Labor occupations were more likely to have an OSHA event than other groups. Crafts and Manual Labor workers had the highest average number of lost or restricted workdays (11). This group of workers comprised 7 percent of the work force but had 72 percent of the days lost and 60 percent of the days restricted. The Crafts and Manual Labor group had an overall occupational injury risk almost 7 times greater than the other occupational groups. Security workers were also at a greater risk for injuries--more than five times greater than other groups.



Compared with the work force as a whole, Security workers and those in Crafts and Manual Labor emerged as the two occupational groups at highest risk for OSHA-recordable injuries. Security workers were nine times more likely to suffer back sprains and strains and over 15 times more likely to report other sprains and strains than were other workers. We also noted that Crafts and Manual Laborers were four times more likely to suffer sprains and strains than

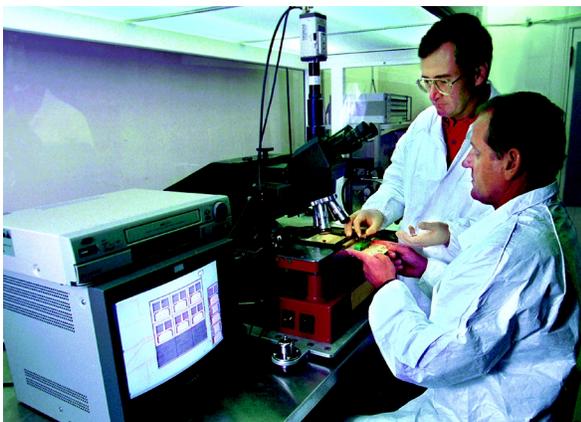


were other groups. They were also more than 16 times as likely to sustain open wounds to the upper limb, 9 times as likely to report a bruise, and 10 times more likely to report an adverse reaction to a non-medicinal substance. The magnitude of these risks suggests the need for additional attention concerning injuries among Security workers and Crafts and Manual Laborers. The 87 OSHA events among these workers resulted in 688 days of restricted activity and 179 lost workdays; a substantial loss of productivity. Additional information about the risk of occupational injury and illness of various occupational groups is provided in the supporting tables.

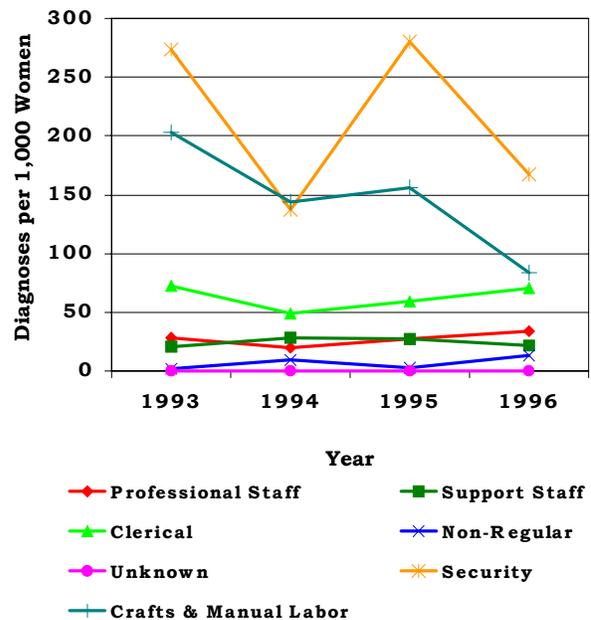


## Time Trends for OSHA-Recordable Events

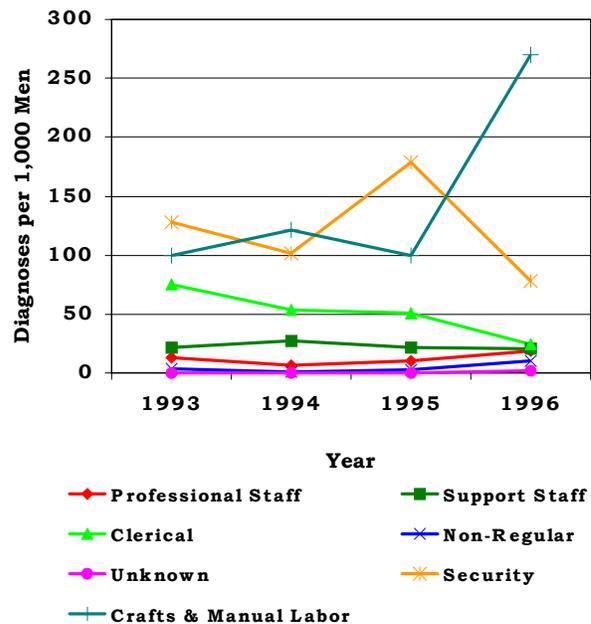
The age-adjusted rates for all diagnoses combined, by job category and gender, from 1993 through 1996, are shown in Figures 19 and 20. Overall rates for OSHA-recordable injuries among men and women in Security fluctuated more widely than did others, but the fluctuations were not consistent. It is possible that annual variations in the number of events reported by this relatively small group of workers resulted in large apparent changes in the rates, but there is no indication of a consistent trend in OSHA-recordable event rates among Security workers. Among Crafts and Manual Laborers, the rate declined between 1993 and 1996 for women but increased for men. The increase among men was largely confined to 1996. Other occupational groups changed much less dramatically over the four-year period. We observed a modest decline in the rate among men in Clerical occupations and a correspondingly modest increase among women in Clerical occupations, but other groups showed little evidence of systematic variation over time.



**Figure 19. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Women by Job Category from 1993 to 1996**



**Figure 20. Age-Adjusted Rates for All OSHA-Recordable Diagnoses Combined Among Men by Job Category from 1993 to 1996**



## Glossary

**Adjustment:** A mathematical procedure for rates in which the effects of differences of a characteristic (such as age or gender) between groups have been removed. The purpose of adjustment is to allow comparisons between two or more groups with the effect of the differences for the characteristic removed.

**Age-Adjusted Rate:** A rate that has been mathematically adjusted to account for the effects of differences in the age composition between groups.

**Age-Specific Rate:** A rate that is calculated for a specific age group (e.g., 16 to 29 years old). Only people in the specific age group are included in the calculation of the rate.

**Confidence Interval:** A range of values determined by the degree of random variability in the data. The width of the confidence interval is affected by the size of the group being studied and how often the event whose true value is sought occurs. Generally, as the size of the group or the frequency of the event increases, the width of the confidence interval decreases. The level of confidence, for example, a 95 percent confidence level, indicates the percentage of time that the true value is expected to fall within the confidence interval if the mathematical procedure is repeated 100 times.

**Demographics:** Characteristics of human populations related to their size, density, age distribution, and vital status.

**Diagnosis (diagnoses):** Identification of a disease or health condition from signs and symptoms.

**Diagnosis Rate:** The number of occurrences of a given disease or health condition observed during a given time period per the number of workers at risk of getting that disease during that time period. It is usually multiplied by 100 or 1,000 to produce a rate expressed as a convenient number.

**Diagnostic Category:** A particular type of disease, a group of related health conditions, or diseases that all affect the same organ system.

**Epidemiologic Surveillance:** The ongoing evaluation of the health of a human population which is based on the collection and interpretation of demographic and health information for that population.

**Epidemiology:** The study of the distribution and determinants of diseases and health conditions in human populations.

**ICD-9-CM Code:** An abbreviation for the *International Classification of Diseases, 9th Revision, Clinical Modification*. An internationally accepted standardized system for the classification of disease and health data collected from medical records.

**OSHA:** An acronym for the Occupational Safety and Health Administration.

**OSHA Event:** An abbreviation used throughout this report for an OSHA-recordable event.

**OSHA-Recordable Event:** An accident that occurs on the job and involves fatalities (regardless of time between injury and death), time lost from work, transfer of employment, medical treatment other than first aid, loss of consciousness, or restriction of work or motion. Also included is any diagnosed occupational health event reported to the employer that is neither fatal nor results in workdays lost. By law, these events are recordable in the OSHA 200 Log.

**Person-Year:** A unit of measurement combining the number of people being studied with the time that each was observed equivalent to one person followed for one year. For example, 5 persons followed for one year contribute five person-years, as do 10 people each followed for half a year.

**Relative Risk:** The ratio of the occurrence of a disease or health condition in one group compared to the rate of occurrence of that same disease or health condition in another group.

### Explanation of Diagnostic Categories

Throughout this report, health conditions have been grouped into a number of diagnostic categories which come from the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM). For the text of this report the categories are abbreviated to make the report easier to read. The following table lists the abbreviated categories used throughout the annual report and the corresponding ICD-9-CM codes found in the Supporting Tables.

| Abbreviated Categories Used in the Annual Report | ICD-9-CM Codes     |
|--|--------------------|
| Benign Growths                                   | 210-229<br>235-239 |
| Blood  | 280-289            |
| Cancer   | 140-208<br>230-234 |
| Digestive  | 520-579            |
| Endocrine/Metabolic                              | 240-279            |
| Existing Birth Conditions                        | 740-759            |
| Genitourinary                                    | 580-629            |
| Heart/Circulatory                                | 390-459            |
| Infectious/Parasites                             | 001-139            |
| Injury   | 800-999            |
| Miscarriage                                      | 630-676            |
| Muscles and Skeleton                             | 710-739            |
| Nervous System                                   | 320-389            |
| Psychological                                    | 290-319            |
| Respiratory                                      | 460-519            |
| Skin   | 680-709            |
| Unspecified Symptoms                             | 780-799            |

**ICD-9-CM Codes**

|  |         |   |
|--|---------|---|
| <b>All conditions</b>  | 001-V82 | All reported health events  |
| <b>Infectious and parasitic diseases</b>                                       | 001-139 | Diseases caused by bacteria, viruses, and parasites   |
| • Intestinal infections  | 001-009 | Infections of the bowel or gut  |
| • Tuberculosis   | 010-018 | TB in the lungs and other organs  |
| • Zoonotic bacterial diseases  | 020-027 | Bacterial diseases that animals transmit to humans  |
| • Other bacterial diseases   | 030-041 | Whooping cough, diphtheria, strep throat, and gangrene  |
| • Human Immunodeficiency Virus (HIV) infection                                 | 042     | AIDS  |
| • Poliomyelitis and other non-arthropod diseases of the central nervous system | 045-049 | Viral meningitis (swelling of the layers covering the brain and spinal cord); viral encephalitis (swelling of the brain); and polio |
| • Viral diseases accompanied by exanthem                                       | 050-057 | Diseases accompanied by rashes or blisters like chickenpox, measles, shingles, and herpes   |
| • Arthropod-borne viral diseases   | 060-066 | Encephalitis (swelling of the brain) caused by bites from virus-carrying ticks or mosquitoes  |
| • Other diseases caused by viruses and chlamydiae                              | 070-079 | Viral hepatitis, mumps, rabies, and mononucleosis   |
| • Rickettsioses and other arthropod-borne diseases                             | 080-088 | Rocky Mountain spotted fever, malaria, and lyme disease   |
| • Other spirochetal diseases   | 100-104 | Trench mouth and Weil's disease (jaundice caused by coil-shaped bacteria)   |
| • Mycoses  | 110-118 | Athlete's foot; fungal infections of fingernails and toenails; and thrush   |
| • Helminthiases  | 120-129 | Pinworms, tapeworms, roundworms, and whipworms  |
| • Other infectious and parasitic diseases                                      | 130-136 | Lice, chiggers, scabies, and mites  |

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| • Late effects of infectious or parasitic diseases                                       | 137-139          | Side effects of TB, chickenpox, or polio even though the disease is no longer active  |
| <b>Malignant neoplasms</b>   | 140-208, 230-234 | All cancers, regardless of the part of the body affected  |
| • Lip, oral cavity, and pharynx  | 140-149          | Lip, mouth, throat, and tongue  |
| • Digestive organs and peritoneum  | 150-159          | Stomach, esophagus (tube that transports food to the stomach), intestines, colon, rectum, anus, liver, pancreas, and gallbladder  |
| • Respiratory system and intrathoracic organs  | 160-165          | Sinuses, throat, voice box, lungs, and heart  |
| • Bone, connective tissue, skin, and breast  | 170-176          | Bone, muscle, ligament, tendon, blood vessels, fat, skin, and breast  |
| • Genitourinary organs   | 179-189          | Kidney, bladder, and cervix, ovary, uterus, and prostate  |
| • Other and unspecified sites  | 190-199          | Eye, brain, and thyroid   |
| • Lymphatic and hematopoietic tissue   | 200-208          | Leukemia, lymphoma, Hodgkin's disease, multiple myeloma, lymphosarcoma, and reticulum cell sarcoma  |
| • Carcinoma in situ  | 230-234          | A cancer that is confined to the site of origin (has not spread to neighboring tissue)  |
| <b>Benign neoplasms and neoplasms of uncertain behavior and unspecified nature</b>       | 210-229 235-239  | Tumors that are not cancerous or do not exhibit cancerous behavior, regardless of the part of the body affected   |
| <b>Endocrine, nutritional, and metabolic diseases and disorders of the immune system</b> | 240-279          | Diseases affecting the hormone secreting glands and organs. Overactive thyroid; underactive thyroid; vitamin deficiency; diabetes; gout; and problems affecting the antibody producing system |
| <b>Disorders of the blood and blood forming organs</b>                                   | 280-289          | Anemia and hemophilia (excludes leukemia)   |

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| <b>Mental disorders</b>  | 290-319 | Psychiatric diagnoses - Non-psychotic disorders: depression; anxiety, fear, and stress disorders; alcoholism; drug dependence; and eating disorders, such as anorexia; Psychotic disorders: dementia, schizophrenia, and manic depression |
| <b>Diseases of the nervous system and sense organs</b>               | 320-389 | Huntington's chorea; Alzheimer's and Parkinson's disease; epilepsy; multiple sclerosis; migraine; diseases of the eye, such as cataract and glaucoma  |
| • Inflammatory diseases of the central nervous system                | 320-326 | Bacterial meningitis (swelling of the layers covering the brain and spine); bacterial encephalitis (swelling of the brain); and brain and spinal abscesses  |
| • Hereditary and degenerative diseases of the central nervous system | 330-337 | Alzheimer's and Parkinson's disease, tremors, and Huntington's chorea   |
| • Other disorders of the central nervous system                      | 340-349 | Multiple sclerosis (MS), cerebral palsy, epilepsy, and migraine   |
| • Disorders of the peripheral nervous system                         | 350-359 | Nerve disorders of the face, carpal tunnel syndrome, muscular dystrophy   |
| • Disorders of the eye   | 360-379 | Inflammation and ulcers of the eye and eyelid; detached retina; pink eye; problems with tear ducts; glaucoma; and cataracts   |
| • Diseases of the ear and mastoid process                            | 380-389 | Infections of the outer, middle, or inner ear; ringing of the ears; hearing loss  |
| <b>Diseases of the circulatory system</b>                            | 390-459 | Rheumatic fever, heart murmurs, heart attacks, angina, hardening of the arteries, varicose veins, hemorrhoids, and phlebitis  |
| • Acute rheumatic fever  | 390-392 | High fever and joint pain with possible heart damage  |
| • Chronic rheumatic heart disease                                    | 393-398 | Long lasting swelling and damage to the heart which results from rheumatic fever  |
| • Hypertensive disease   | 401-405 | High blood pressure   |

- Ischemic heart disease (Restricted blood flow to the heart) 410-414 Heart attack and angina
- Diseases of pulmonary circulation 415-417 Blood clots in the lung and pulmonary aneurysm (bulge that develops in the wall of the pulmonary artery, which is the artery that carries blood to the lungs)
- Other forms of heart disease 420-429 Swelling of the inner lining, middle lining, or sac enclosing the heart; heart failure; and irregular heartbeat
- Cerebrovascular disease 430-438 Stroke, bleeding in the brain, and blockage or low blood flow in blood vessels of the brain
- Diseases of the arteries and capillaries 440-448 Hardening of the arteries; aneurysm (bulge that develops in the walls of arteries); and blood clots
- Diseases of the veins, lymphatics, and other circulatory system diseases 451-459 Phlebitis (swelling of a vein), thrombophlebitis (swelling of a vein which has a blood clot), varicose veins, and hemorrhoids
- Diseases of the respiratory system** 460-519 Colds, sinusitis, laryngitis, pneumonia, influenza, chronic bronchitis, asthma, and emphysema
- Acute respiratory infections 460-466 Colds, sore throat, sinus infections, swollen tonsils, and bronchitis
- Other diseases of the upper respiratory tract 470-478 Allergies, hay fever, sinus infections, bronchitis, and sore throat that continue for a long time
- Pneumonia and influenza 480-487 “The flu” and pneumonia caused by a bacteria or virus
- Chronic obstructive pulmonary diseases and allied conditions 490-496 Emphysema and asthma
- Pneumoconiosis and other lung diseases caused by external agents 500-508 Black lung; miners’ asthma; asbestosis; silicosis; berylliosis; and conditions caused by chemical fumes and vapors
- Other diseases of respiratory system 510-519 Pleurisy (swelling of the lining of the lungs), collapsed lung, and respiratory failure

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| <b>Diseases of the digestive system</b>                 | 520-579 | Diseases affecting the teeth and mouth, salivary glands, digestive tract, and the abdominal cavity. Examples include dental abscess, ulcers, appendicitis, hepatitis (excluding viral hepatitis), cirrhosis of the liver, gallstones, pancreatitis, abdominal hernia, and intestinal polyps |
| • Diseases of the oral cavity, salivary glands, and jaw | 520-529 | Tooth problems (too many, too few, abnormal shape or size, cavities, bleeding gums, toothaches), and infections and swelling of the mouth, jaw, and tongue  |
| • Diseases of the esophagus, stomach, and duodenum      | 530-537 | Ulcers of the esophagus (tube that transports food to the stomach), stomach, and small intestine; indigestion; and uncontrollable vomiting  |
| • Appendicitis  | 540-543 | Swelling of the appendix (rupture, surgery, or both may result)   |
| • Hernia of the abdominal cavity                        | 550-553 | Ruptures of the groin and diaphragm (muscle which separates the chest area from the lower part of the trunk)  |
| • Non-infectious enteritis and colitis                  | 555-558 | Crohn's disease and swelling of the intestine and colon   |
| • Other diseases of the intestines and peritoneum       | 560-569 | Irritable bowel syndrome, blockage of the intestine, constipation, and diarrhea   |
| • Other diseases of the digestive system                | 570-579 | Diseases of the liver, gallbladder, and pancreas; hepatitis; blood in stool; and bleeding in the stomach and intestine  |
| <b>Diseases of the genitourinary system</b>             | 580-629 | Diseases affecting the kidneys, the prostate, and testes; benign breast diseases; infertility (male and female); diseases of the ovary; pelvic inflammatory disease; and menstrual disorders  |
| • Nephritis, nephrotic syndrome, and nephrosis          | 580-589 | Swelling of the kidney; swelling of the small blood vessels in the kidney; and kidney failure   |
| • Other diseases of the urinary system                  | 590-599 | Swelling and infection of the kidney and bladder; kidney stones; and difficulty urinating   |

- Diseases of the male genital organs      600-608      Enlarged prostate; swelling of the scrotum and prostate; and abscess of the prostate
  
- Disorders of the breast      610-611      Benign tumors, cysts, and infections of the breast
  
- Inflammatory disease of the female pelvic organs      614-616      Swelling of the uterus, ovary, fallopian tubes, or cervix
  
- Other diseases of the female genital tract      617-629      Conditions associated with menopause and postmenopause; PMS; infertility; and cramps
  
- Complications of pregnancy, childbirth, and the puerperium**      630-676      Miscarriage; complications of pregnancy, such as hemorrhage; pregnancy-related high blood pressure; preeclampsia; and premature labor or other complications of labor
  
- Ectopic and molar pregnancy      630-633      Development of fetus outside the uterus and growth of cysts
  
- Other pregnancy with abortive outcome      634-639      Miscarriage and complications associated with miscarriage
  
- Complications mainly related to pregnancy      640-648      Abnormal bleeding and possible miscarriage; infections; high blood pressure caused by pregnancy; and premature labor
  
- Normal delivery, and other indications for care in pregnancy, labor, and delivery      650-659      Delivery requiring little or no assistance; multiple births; breech birth; and problems of the fetus or placenta which affect care of mother
  
- Complications occurring mainly in the course of labor and delivery      660-669      Long labor; unusually fast delivery; and abnormal bleeding after delivery
  
- Complications of the puerperium      670-676      Infections of the breast; blood clot in lung; and varicose veins
  
- Diseases of the skin and subcutaneous tissue**      680-709      Acne, cellulitis, sunburn, psoriasis, and seborrhea
  
- Infections of the skin and subcutaneous tissue      680-686      Abscesses, boils, hair-containing cysts, and pus-filled blisters

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| • Other inflammatory conditions of skin and subcutaneous tissue          | 690-698 | Skin rashes caused by detergents, oils, greases, solvents, sun, food, drugs, or medicine  |
| • Other diseases of the skin and subcutaneous tissue                     | 700-709 | Corns, calluses, heat rash, swollen hair follicles, acne, and ingrown fingernails and toenails  |
| <b>Diseases of the musculoskeletal system and connective tissue</b>      | 710-739 | Arthritis, systemic lupus erythematosus, ankylosing spondylitis, herniated intervertebral disc (“slipped disc”), lumbago, sciatica, rheumatism, tendonitis, and osteoporosis            |
| • Arthropathies and related disorders                                    | 710-719 | Arthritis; joint pain and stiffness; and other diseases of the connective tissue which supports and connects internal organs, forms bones and blood vessel walls, and attaches to bones |
| • Dorsopathies   | 720-724 | Swelling of the spine; herniated, slipped, and ruptured disc; rheumatoid arthritis of the spine; lumbago; and sciatica  |
| • Rheumatism, excluding the back   | 725-729 | Swelling and degeneration of joints, muscles, tendons; tennis elbow; and bursitis   |
| • Osteopathies, chondropathies, and acquired musculoskeletal deformities | 730-739 | Fracture caused by bone disease; osteoporosis; curvature of the spine; flat foot; hammer toe; and development of deformities of the nose, toes, feet, legs, arms, and hands             |
| <b>Congenital anomalies</b>  | 740-759 | Spina bifida; cleft palate; harelip; and various chromosomal anomalies, such as Klinefelter’s syndrome  |
| <b>Certain conditions originating in the perinatal period</b>            | 760-779 | Maternal high blood pressure; maternal malnutrition; ectopic pregnancy; breech birth; fetal malnutrition or slow growth; injuries related to birth trauma; and perinatal jaundice       |
| <b>Symptoms, signs, and ill-defined conditions</b>                       | 780-799 | Blackout, chills, dizziness, fatigue, pallor, abnormal weight loss, undiagnosed chest pain, and heartburn   |

- Symptoms 780-789 Hallucinations, fainting, convulsions, dizziness, fatigue, fever, sleep disturbance, rash, headache, sore throat, chest pain, nausea, vomiting, and heartburn
  
- Non-specific abnormal findings 790-796 Abnormal x-ray, blood, stool, and urine test results
  
- Ill-defined and unknown causes of morbidity and mortality 797-799 Senility; asphyxia; respiratory arrest; nervousness; and unexplained death within 24 hours of onset of symptoms
  
- Injury and poisoning** 800-999 Dislocation of joints; sprains and strains of associated muscles; concussions; bruises; cuts; internal injuries from crushing, puncture, tearing, or blunt impact; burns; blisters; poisoning; frostbite; heatstroke; and complications of medical or surgical care
  
- Fractures, all sites 800-829 Cracks or breaks of any bone
  
- Dislocations 830-839 Separation of a bone from its normal socket or joint
  
- Sprains and strains of joints and adjacent muscles 840-848 Strains are injuries to muscle from overuse or stretching the muscle beyond its normal limit; sprains are injuries involving tearing or overextending the ligaments of a joint
  
- Intracranial injuries excluding those with skull fractures 850-854 Concussions; internal bruises; and bleeding within the head without a fracture of the bones of the skull
  
- Internal injuries of the thorax, abdomen, and pelvis 860-869 Bruising, crushing, tearing, or rupturing the chest, abdomen, and pelvis and the organs within these areas of the body
  
- Open wounds 870-897 Animal bites; cuts; lacerations; punctures; and amputations, excluding the arteries and veins

- Other injuries and late effects of external causes

900-999 Miscellaneous injuries, including injuries to the arteries and veins; problems that occur an extended period of time after the injury has taken place ("late effects"); superficial bruises and abrasions; burns; post-injury shock; poisoning; toxic side effects of chemicals; heatstroke; electrocution; and altitude sickness

**Supplementary classifications related to personal or family history of disease**

V10-V19 Covers situations in which the person is not ill or injured but has a personal or family history of problems, such as cancer, mental illness, allergies, or arthritis that may affect his or her risk of illness

**Supplementary classifications related to health care for reproduction and child development**

V20-V28 Problems related to pregnancy, postpartum care, contraception, outcome of delivery, and physical development of child

**Contact with health services for reasons other than illness or injury**

V50-V59 Care for workers who have been treated previously for an illness or injury that is no longer present but who receive care to complete treatment or prevent recurrence

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